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Amendments to the Claims

1. (CURRENTLY AMENDED) An ~~IR~~ infrared radiation-sensitive composition comprising:

- (a) a first polymeric binder which ~~does not comprise~~ is free of acidic groups moieties having a pKa value less than or equal to 8;
- (b) a second polymeric binder comprising polyether groups moieties;
- (c) an initiator system comprising:
 - (i) at least one ~~compound capable of absorbing IR radiation~~ infrared radiation absorbing material selected from comprising a triarylamine dye[[s]], thiazolium dye[[s]], indolium dye[[s]], oxazolium dye[[s]], cyanine dye[[s]], polyaniline dye[[s]], polypyrrole dye[[s]], polythiophene dye[[s]] and or phthalocyanine pigment[[s]];
 - (ii) at least one polyhaloalkyl-substituted compound capable of producing radicals, ~~selected from polyhaloalkyl-substituted compounds; and wherein~~

$$\text{ox}_{(i)} < \text{red}_{(ii)} + 1.6\text{eV}$$

and wherein ox_i is the oxidation potential of the infrared radiation absorbing material in eV and red_{ii} is the reduction potential of the polyhaloalkyl-substituted compound in eV; and

- (iii) at least one ~~polycarboxylic acid~~ compound represented by the following formula I



wherein Y is ~~selected from the group consisting of O, S and or NR⁷~~,
each of R⁴, R⁵ and R⁶ is independently selected from the group consisting

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of hydrogen, C₁-C₄ alkyl, substituted or unsubstituted aryl, -COOH and or NR⁸CH₂COOH,

R⁷ is selected from the group consisting of a hydrogen, C₁-C₆ alkyl, -CH₂CH₂OH, and or C₁-C₅ alkyl substituted with -COOH, R⁸ is selected from the group consisting of -CH₂COOH, -CH₂OH and or -(CH₂)₂N(CH₂COOH)₂, and r is 0, 1, 2 or 3, with the proviso that and wherein at least one of R⁴, R⁵, R⁶, R⁷ and R⁸ comprises a -COOH group moiety or salts thereof; and

- (d) a free radical polymerizable system comprising at least one member selected from unsaturated free radical polymerizable monomer[[s]], free radical polymerizable oligomer,[[s]] which are free radical polymerizable and or a polymer[[s]] containing C=C bonds in the back bone, and/or in the side chains groups, or both, and wherein the following inequality is met:

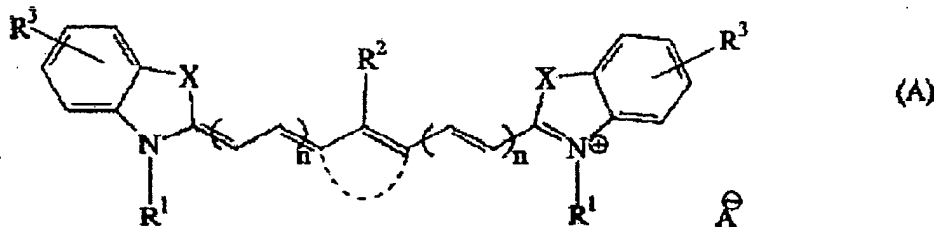
$$ox_i < red_{ii} + 1.6eV$$

with ox_i = oxidation potential of component (i) in eV red_{ii} =
reduction potential of component (ii) in eV.

2. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition according to of claim 1, wherein the ~~compound capable of infrared radiation absorbing material~~ absorbing IR radiation is comprises a cyanine dye.

3. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition according to of claim 1 [[2]], wherein the ~~cyanine dye has infrared radiation absorbing material is~~ represented by the formula (A)

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wherein each X is independently S, O, NR or C(alkyl)₂; each R¹ is independently an alkyl group, an alkylsulfonate or an alkylammonium group; R² is hydrogen, halogen, SR, SO₂R, OR or NR₂; each R³ is independently [[a]] hydrogen atom, an alkyl group, COOR, OR, SR, NR₂, [[a]] halogen atom or an optionally substituted benzofused ring; A⁻ is an anion; the dashed line (---) completes an optional carbocyclic five- or six-membered ring; each R is independently hydrogen, an alkyl or aryl group; and each n is independently 0, 1, 2 or 3.

4. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition ~~according to of~~ claim 1, wherein the ~~compound capable of absorbing IR-radiation~~ absorbing material ~~is selected from the group consisting of comprises:~~

2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclopenten-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate;

2-[2-[2-phenylsulfonyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride;

2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride;

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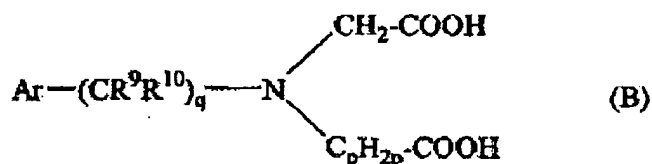
2-[2-[2-chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate;

~~and~~ or

2-[2-[2-chloro-3-[2-ethyl-(3H-benzothiazol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-3-ethyl-benzothiazolium tosylate.

5. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition according to ~~of~~ claim 1, wherein the ~~compound capable of producing radicals is selected from the group consisting of polyhaloalkyl-substituted compound~~ comprises 2-(4-methoxyphenyl)-4,6-bis-(trichloromethyl)-s-triazine, 2-(4-chlorophenyl)-4,6-bis-(trichloromethyl)-s-triazine, 2-phenyl-4,6-bis-(trichloromethyl)-s-triazine, 2,4,6-tri-(trichloromethyl)-s-triazine, 2,4,6-tri-(tribromomethyl)-s-triazine, and or ~~tribromomethyl phenylsulfone.~~

6. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition according to ~~of~~ claim 1, wherein the ~~polycarboxylic acid is selected from the group consisting of the compound represented by formula I~~ comprises a compound of ~~represented by formula (B)~~

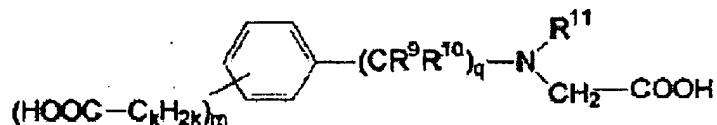


wherein ~~Ar is a mono, poly or unsubstituted aryl group, p is an integer from 1 to 5, R⁹ and R¹⁰ are independently selected from the group consisting of hydrogen and C₁-C₄ alkyl and q is 0 or an integer from 1 to 3, and a compound of formula (C)~~

or a compound represented by formula C

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(C)

wherein Ar is a mono-, poly- or unsubstituted aryl group, p is an integer from 1 to 5, each R^9 and R^{10} is independently hydrogen or C_1-C_4 alkyl, q is 0 or an integer from 1 to 3, and wherein R^{11} represents is $[[a]]$ hydrogen atom or a C_1-C_6 alkyl group, and k and m each are an integer from 1 to 5, and R^9 , R^{10} and q are as defined above.

7. (CURRENTLY AMENDED) The IR infrared radiation-sensitive composition according to of claim 1 ~~[[6]]~~, wherein the polycarboxylic acid is selected from compound represented by formula I comprises anilino diacetic acid and or N-(carboxymethyl)-N-benzyl-glycine.

8. (CANCELLED) The IR-sensitive composition according to of claim 1, wherein the first polymeric binder comprises side chains comprising at least one group selected from the group consisting of $-\text{COOR}$, $-\text{CONHR}$ and $-\text{NR}^{12}\text{COOR}^{13}$ groups.

9. (CURRENTLY AMENDED) The IR infrared radiation-sensitive composition according to of claim 1, wherein the first polymeric binder comprises a main chain comprising at least one of ester group $[[s]]$ and or urethane group $[[s]]$.

10. (CURRENTLY AMENDED) The IR infrared radiation-sensitive composition according to of claim 1, wherein the polyether groups of the second polymeric binder are derived from polyoxy alkylenes.

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11. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition ~~according to of claim 10 13~~, wherein the polyoxy alkylenes ~~are selected from~~ comprise ethylene oxide ~~and or~~ propylene oxide.

12. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition ~~according to of claim 1~~, wherein the polyether groups of the second polymeric binder comprise at least one end group ~~selected from the group consisting of~~ comprising -OH, -OR, RCONH, and ~~SiR₂OR~~ groups.

13. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition ~~according to of claim 1~~, further comprising a leuco dye ~~selected from the group consisting of~~ comprising a triarylmethane[[s]], thioxanthene[[s]], 9,10-dihydro-acridine[[s]] ~~and or~~ phenoxazine[[s]] dye.

14. (CURRENTLY AMENDED) The ~~IR~~ infrared radiation-sensitive composition ~~according to of claim 1~~, further comprising at least one colorant ~~selected from the group consisting of~~ comprising a rhodamine dye[[s]], triarylmethane dye[[s]], anthraquinone pigment[[s]], phthalocyanine dye[[s]], ~~and or~~ a pigment[[s]].

15. (CURRENTLY AMENDED) The ~~IR~~ radiation sensitive-sensitive composition ~~according to of claim 1~~, further comprising at least one softening agent.

16. (CURRENTLY AMENDED) A printing plate precursor comprising:

- (A) a substrate;
- (B) a negative-working bottom layer applied onto the substrate, and comprising an IR-sensitive composition comprising a polymeric binder comprising polyether groups moieties and an initiator system comprising:
 - (i) at least one infrared radiation absorbing material comprising a triarylamine dye, thiazolium dye, indolium dye, oxazolium dye, cyanine

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dye, polyaniline dye, polypyrrole dye, polythiophene dye or phthalocyanine pigment;

(ii) at least one polyhaloalkyl-substituted compound capable of producing radicals, wherein

$$\text{ox}_{(i)} < \text{red}_{(ii)} + 1.6\text{eV}$$

and wherein ox_i is the oxidation potential of the infrared radiation absorbing material in eV and red_{ii} is the reduction potential of the polyhaloalkyl-substituted compound in eV; and

(iii) at least one compound represented by the formula I



wherein Y is O, S or NR⁷,

each of R⁴, R⁵ and R⁶ is hydrogen, C₁-C₄ alkyl, substituted or unsubstituted aryl, -COOH or NR⁸CH₂COOH, R⁷ is C₁-C₆ alkyl, -CH₂CH₂OH, or C1-C5 alkyl substituted with -COOH, R⁸ is -CH₂COOH, -CH₂OH and or -(CH₂)₂N(CH₂COOH)₂, and r is 0, 1, 2 or 3, and wherein at least one of R⁴, R⁵, R⁶, R⁷ and R⁸ comprises a -COOH moiety or salts thereof;

(C) a free radical polymerizable system comprising at least one unsaturated free radical polymerizable monomer, free radical polymerizable oligomer, or a polymer containing C=C bonds in the back bone, in the side chains, or both.

(D) an oxygen-impermeable top layer applied onto the bottom layer, wherein the printing plate precursor does not comprise an is free of an IR infrared radiation-ablatable layer.

17. (CANCELLED)The printing plate precursor of Claim 16, wherein the IR-sensitive composition further comprises:

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- (a) a polymeric binder which does not comprise acidic groups having a pKa value less than or equal to 8;
- (b) an initiator system comprising:
 - (i) at least one compound capable of absorbing IR radiation selected from triarylamine dyes, thiazolium dyes, indolium dyes, oxazolium dyes, cyanine dyes, polyaniline dyes, polypyrrole dyes, polythiophene dyes and phthalocyanine pigments;
 - (ii) at least one compound capable of producing radicals selected from polyhaloalkyl-substituted compounds; and
 - (iii) at least one polycarboxylic acid represented by the following formula

I



wherein Y is selected from the group consisting of O, S and NR⁷, each of R⁴, R⁵ and R⁶ is independently selected from the group consisting of hydrogen, C₁-C₄ alkyl, substituted or unsubstituted aryl, -COOH and NR⁸CH₂COOH,

R⁷ is selected from the group consisting of hydrogen, C₁-C₆ alkyl, -CH₂CH₂OH, and C₁-C₅ alkyl substituted with -COOH,

R⁸ is selected from the group consisting of -CH₂COOH, -CH₂OH and - (CH₂)₂N(CH₂COOH)₂ and r is 0, 1, 2 or 3, with the proviso that at least one of R⁴, R⁵, R⁶, R⁷ and R⁸ comprises a -COOH group or salts thereof; and

- (c) a free radical polymerizable system comprising at least one member selected from unsaturated free radical polymerizable monomers, oligomers which are free radical polymerizable and polymers containing C=C bonds in the back bone, and/or in the side chain groups, wherein the following inequality is met:

$$ox_i < red_{II} + 1.6 \text{ eV}$$

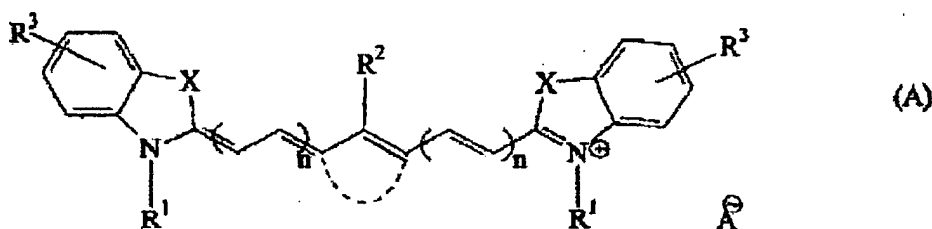
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with ox_i = oxidation potential of component (i) in eV

red_{ii} = reduction potential of component (ii) in eV.

18. (CANCELLED) The printing plate precursor according to claim 17, wherein the compound capable of absorbing IR-radiation is a cyanine dye.

19. (CANCELLED) The printing plate precursor according to claim 18, wherein the cyanine dye has the formula (A)



wherein each X is independently S, O, NR or C(alkyl)₂; each R¹ is independently an alkyl group, an alkylsulfonate or an alkylammonium group; R² is hydrogen, halogen, SR, SO₂R, OR or NR₂; each R³ is independently a hydrogen atom, an alkyl group, COOR, OR, SR, NR₂, a halogen atom or an optionally substituted benzofused ring; A⁻ is an anion; the dashed line (---) completes an optional carbocyclic five- or six-membered ring; each R is independently hydrogen, an alkyl or aryl group; and each n is independently 0, 1, 2 or 3.

20. (CANCELLED) The printing plate precursor according to claim 17, wherein the compound capable of absorbing IR-radiation is selected from the group consisting of:

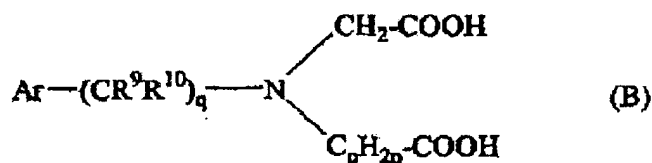
2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclopenten-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate;
2-[2-[2-phenylsulfonyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride;

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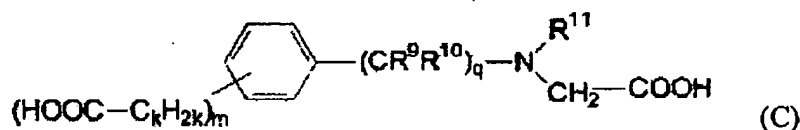
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2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride;
 2-[2-[2-chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate;
 and
 2-[2-[2-chloro-3-[2-ethyl-(3H-benzothiazol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-3-ethyl-benzothiazolium tosylate.

21. (CANCELLED) The printing plate precursor according to claim 17, wherein the polycarboxylic acid is selected from the group consisting of a compound of formula (B)



wherein Ar is a mono-, poly- or unsubstituted aryl group, p is an integer from 1 to 5, R⁹ and R¹⁰ are independently selected from the group consisting of hydrogen and C₁-C₄ alkyl and q is 0 or an integer from 1 to 3,
 and a compound of formula (C)



wherein R¹¹ represents a hydrogen atom or a C₁-C₆ alkyl group, k and m each are an integer from 1 to 5, and R⁹, R¹⁰ and q are as defined above.

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22. (CANCELLED) The printing plate precursor according to claim 17, wherein the polymeric binder which does not comprise acidic groups having a pKa value less than or equal to 8 comprises side chains comprising at least one group selected from -COOR, -CONHR, and-NR¹²COOR¹³ groups.
23. (CANCELLED) The printing plate precursor according to claim 17, wherein the polymeric binder which does not comprise acidic groups having a pKa value less than or equal to 8 comprises a main chain comprising at least one of ester groups and methane groups.
24. (CANCELLED) The printing plate precursor according to claim 16, wherein the polyether groups are derived from polyoxy alkylenes.
25. (CANCELLED) The printing plate precursor according to claim 24, wherein the polyoxy alkylenes are selected from ethylene oxide and propylene oxide.
26. (CANCELLED) The printing plate precursor according to claim 16, wherein, the polyether groups comprise at least one group selected from the group consisting of-OH, -OR, RCONH-, and SiR₂OR groups.
27. (ORIGINAL) The printing plate precursor of claim 16, wherein the oxygen-impermeable layer comprises polyvinyl alcohol.
28. (PRESENTLY AMENDED) The printing plate precursor of claim 16, wherein the oxygen-impermeable layer comprises ~~one of~~ behenic acid, behenic acid amide, ~~and or~~ N,N'-diallyl tartardiamide.
29. (CANCELLED) The printing plate precursor of claim 17, wherein the IR-sensitive composition further comprises at least one colorant selected from the group consisting of

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rhodamine dyes, triarylmethane dyes, anthraquinone pigments, phthalocyanine dyes and/or pigments.

30. (CANCELLED) The printing plate precursor of claim 17, wherein the IR-sensitive composition further comprises at least one softening agent.

31. (PRESENTLY AMENDED) A method for preparing an on-press developable printing plate, the method comprising:

- (A) providing a substrate;
- (B) applying a negative-working bottom layer comprising an IR an infrared radiation-sensitive composition onto the substrate to obtain form a printing plate precursor, wherein the IR radiation sensitive-composition comprises a first polymeric binder which is free of acidic groups moieties having a pKa value less than or equal to 8,
a second polymeric binder comprising polyether groups moieties,
an initiator system comprising at least one infrared radiation absorbing material, at least one compound capable of producing radicals and at least one compound represented by the formula I



wherein Y is O, S or NR⁷, each of R⁴, R⁵ and R⁶ is hydrogen, C₁-C₄ alkyl, substituted or unsubstituted aryl, -COOH or NR⁸CH₂COOH, R⁷ is hydrogen, C₁-C₆ alkyl, -CH₂CH₂OH, or C1-C5 alkyl substituted with -COOH, R⁸ is -CH₂COOH, -CH₂OH and or -(CH₂)₂N(CH₂COOH)₂, and r is 0, 1, 2 or 3, and wherein at least one of R⁴, R⁵, R⁶, R⁷ and R⁸ comprises a -COOH moiety or salts thereof; and a free radical polymerizable system;

- (C) applying an oxygen-impermeable top layer onto the bottom layer;

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(D) imagewise exposing the printing plate precursor ~~obtained in step (B)~~ to IR infrared radiation; and

(E) developing the imagewise exposed printing plate precursor on a press on-press, ~~wherein the method does not comprise without a~~ separate development step ~~and does not comprise a~~ or heating step, and wherein the printing plate does not comprise is free of an IR infrared radiation laser ablatable layer.

32. (PRESENTLY AMENDED) The method of Claim 31, wherein the ~~IR-sensitive composition~~ initiator system further comprises

(a) ~~a polymeric binder which does not comprise acidic groups having a pKa less than or equal to 8;~~

~~(d) an initiator system comprising:~~

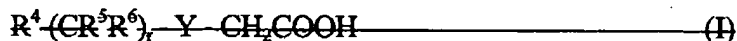
- (i) at least one ~~compound capable of absorbing IR radiation~~ infrared radiation absorbing material selected from comprising a triarylamine dye[[s]], thiazolium dye[[s]], indolium dye[[s]], oxazolium dye[[s]], cyanine dye[[s]], polyaniline dye[[s]], polypyrrole dye[[s]], polythiophene dye[[s]] and or phthalocyanine pigment[[s]];
- (ii) at least one polyhaloalkyl-substituted compound capable of producing radicals, ~~selected from polyhaloalkyl-substituted compounds; and wherein~~

$$\text{ox}_{(i)} < \text{red}_{(ii)} + 1.6\text{eV}$$

and wherein ox_i is the oxidation potential the infrared radiation absorbing material in eV and red_{ii} is the reduction potential of the polyhaloalkyl-substituted compound in eV; and

~~(iii) at least one polycarboxylic acid represented by the following formula~~

I



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~~wherein Y is selected from the group consisting of O, S and NR⁷;~~
~~each of R⁴, R⁵ and R⁶ is independently selected from the group consisting~~
~~of hydrogen, C₁-C₄ alkyl, substituted or unsubstituted aryl, COOH and~~
~~NR⁸CH₂COOH;~~
~~R⁷ is selected from the group consisting of hydrogen, C₁-C₆ alkyl, CH₂CH₂OH,~~
~~and C₁-C₅ alkyl substituted with COOH; R⁸ is selected from the group~~
~~consisting of CH₂COOH, CH₂OH and (CH₂)₂N(CH₂COOH)₂; and r is 0, 1, 2~~
~~or 3, with the proviso that at least one of R⁴, R⁵, R⁶, R⁷ and R⁸ comprises a~~
COOH group or salts thereof wherein the free radical polymerizable system
comprises at least one unsaturated free radical polymerizable monomer, free
radical polymerizable oligomer, or a polymer containing C=C bonds in the
backbone, side chains or both.

33. (CANCELLED) The method of claim 31, wherein the oxygen-impermeable layer comprises polyvinyl alcohol.
34. (CANCELLED) The method of claim 31, wherein the oxygen-impermeable layer comprises one of behenic acid, behenic acid amide, and N,N'-diallyl tartardiamide.
35. (CANCELLED) The method of claim 32, wherein the IR-sensitive composition comprises at least one colorant selected from the group consisting of rhodamine dyes, triarylmethane dyes, anthraquinone pigments and phthalocyanine dyes and/or pigments.
36. (CANCELLED) The method of Claim 32, wherein the IR-sensitive composition comprises at least one softening agent.
37. (NEW) A printing plate precursor comprising:
a substrate;
an infrared radiation-sensitive layer comprising:

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a first polymeric binder that is free of acidic groups having a pKa value less than or equal to 8,
a second polymeric binder comprising polyether moieties,
an initiator system comprising an infrared radiation absorber, at least one compound capable of producing free radicals and at least one polycarboxylic compound; and
a free radical polymerizable system.

38. (NEW) The printing plate precursor of claim 37 further comprising an oxygen-impermeable layer applied onto the infrared radiation-sensitive layer.

39. (NEW) The printing plate precursor of claim 37 wherein the initiator system comprises:

- (i) at least one infrared radiation absorbing material comprising a triarylamine dye, thiazolium dye, indolium dye, oxazolium dye, cyanine dye, polyaniline dye, polypyrrole dye, polythiophene dye or phthalocyanine pigment;
- (ii) at least one polyhaloalkyl-substituted compound capable of producing radicals, wherein

$$\text{ox}_{(i)} < \text{red}_{(ii)} + 1.6\text{eV}$$

and wherein ox_i is the oxidation potential of the infrared radiation absorbing material in eV and red_{ii} is the reduction potential of the radiation absorbing material in eV; and

- (iii) at least one compound represented by the formula I



wherein Y is O, S or NR^7 ,

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each of R^4 , R^5 and R^6 is hydrogen, C_1 - C_4 alkyl, substituted or unsubstituted aryl, $-COOH$ or NR^8CH_2COOH , R^7 is C_1 - C_6 alkyl, $-CH_2CH_2OH$, or C_1 - C_5 alkyl substituted with $-COOH$, R^8 is $-CH_2COOH$, $-CH_2OH$ or $-(CH_2)_2N(CH_2COOH)_2$, and r is 0, 1, 2 or 3, and wherein at least one of R^4 , R^5 , R^6 , R^7 and R^8 comprises a $-COOH$ moiety or salts thereof.

40. (NEW) The printing plate precursor of claim 37 wherein the free radical polymerizable material comprises at least one unsaturated free radical polymerizable monomer, free radical polymerizable oligomer or a polymer containing $C=C$ bonds in the back bone in the side chains, or both.